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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,483	12/14/2001	David S. Wardrop	130109.431	5180

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EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/017,483

Applicant(s)

WARDROP ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: _____

DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of Group I and Species 1 (particularly, claims 1-7 and 9) in Paper No. 7 is acknowledged. The traversal is on the ground(s) that i) "the search and examination of the entire application can be made without serious burden"; ii) "the claims are not distinct"; iii) no reasonable examples reciting material differences have been provided. This is not found persuasive because the particular search for the elected claims is not required for non-elected claims, that is, the search required for the fuel cell stack assembly classified in class 429/23 is not particularly required for both the shunt regulator itself classified in class 323/284 and the method of operating the fuel cell stack per se classified in class 429/13. As admitted by the applicants, the three (3) groups of claim comprise different and distinct inventive concepts and are strictly directed to the fuel cell stack assembly by itself, the shunt regulator as such and the method of operating the fuel cell stack in isolation, respectively. However, since the restriction requirement has been treated as i) combination and subcombination (Group I-II); ii) process and apparatus for its practice (Group III and I); and iii) unrelated (Group II and III), it is further noted that the three inventions are distinct and unrelated because: i) the fuel cell stack assembly (combination) does not require the particular shunt regulator subcombination for operation, that is, the fuel cell stack assembly per se can include any other automatic controller responsive to either temperature or pressure and the subcombination has separate utility, for instance, providing electrical regulation system; ii) the method of operating can be practiced by another materially different apparatus such as *an internal combustion engine or gas turbine* as well as the fuel cell stack can be operated by automatic controlling means responsive to either

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temperature or pressure; iii) the shunt regulator has different modes of operation, different function or different effects such as providing an electrical regulation feature while the method is for operating a fuel cell stack assembly for itself. Accordingly, serious burden would be raised if the search of the three different inventions was made as required for the separate and distinct inventions.

2. With respect to the species, it is noted that as admitted by the applicant and disclosed in the specification, the inventions includes several embodiments (refer to "Brief Description of the Several Views of the Drawings). Thus, the disclosure encompasses several different and separated embodiments, which are mutually exclusive. Accordingly, serious burden would be raised if the search of both different methods was made as required for the separate and distinct inventions.

The requirement is still deemed proper and is therefore made **FINAL**.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 04/30/02 (paper # 5) was considered by the examiner.

Oath/Declaration

4. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

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It does not state that the person making the oath or declaration believes the named inventor or inventors to be the sole or joint inventor or inventors of the subject matter which is claimed and for which a patent is sought.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "42" has been used to designate both the second resistor and the n-channel junction field effect transistor. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 44. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Keller et al 3850695.

The instant claims are directed to a fuel cell stack assembly wherein the claimed inventive concept comprises the specific electrical controlling features. Other limitations include

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the second set of fuel cells; the load positioning; the capacitance; the inductance and the specific transistor.

Regarding claim 1:

Keller et al disclose a voltage regulator system for use with fuel cell battery (TITLE) wherein the fuel cell battery system comprises a load circuit 1 including a fuel cell battery 2 (COL 1, lines 55-60); transistor 43 and 64 (COL 5, lines 17-20/ COL 6, line 6-10); and the load 3 (COL 1, lines 59-63). It is further disclosed that the voltage regulator system for a load circuit energized by a fuel cell battery comprises control means 5 arranged to energize the electric motor (*another load coupled to the fuel cell system*) and monitoring means 4 responsive to the current drawn by the load circuit and having an output switch 33 adapted to be switched from a rest condition to an operated condition whenever a particular specific quantity of electricity has passed through said load (CLAIM 1); a circuit connected to said fuel cell battery 2 for supplying power to a load 3 including, a main switch between the fuel cell battery and the monitoring means, a measuring element 31 forming part of the monitoring means, and the switch path of an electrically controllable switch (CLAIM 1); means for supplying a control voltage necessary to make said switching path of the electrically controllable switch conducting initially in response to the closing thereof and to maintain the switching path conducting responsive to the condition of the portion of the load circuit on the load side of the electrically controllable switch, the voltage across said portion of said load circuit also serving as a supply voltage for activating elements of the monitoring means other than the measuring element thereof (CLAIM 1).

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1. A voltage regulator system for a load circuit (1)
 45 energized by a fuel cell battery (2) comprising:
 a battery fuel storage tank (9);
 means including a pump (8) for supplying fuel from
 said tank to said battery;
 50 an electric motor (7) for driving said pump;
 control means (5) arranged to energize said electric
 motor;
 monitoring means (4) responsive to the current
 drawn by said load circuit and having an output
 55 switch (33) adapted to be switched from a rest con-
 dition to an operated condition whenever a partic-
 ular specific quantity of electricity has passed
 through said load;
 a circuit connected to said battery (2) for supplying
 60 power to a load (3) including, in series, a main
 switch (13) between said battery (2) and said mon-
 itoring means (4), a measuring element (31) form-
 ing part of said monitoring means, and the switch-
 ing path (14-15) of an electrically controllable
 65 switch (16);
 means for supplying a control voltage necessary to
 make said switching path (14-15) of said electri-
 cally controllable switch (16) conducting initially

in response to the closing of said main switch (13)
 and to maintain said switching path conducting in
 response to the condition of the portion of said
 load circuit (1) on the load side of said electrically
 controllable switch (16), the voltage across said
 5 portion of said load circuit also serving as a supply
 voltage for activating elements of said monitoring
 means other than said measuring element thereof;
 and
 connecting circuit means for causing said control 10
 means to activate said motor every time said output
 switch is switched to its operated condition, to
 reset said output switch to its rest condition and
 after an interval to deenergize said motor, said con- 15
 necting circuit means including a monostable flip-
 flop (12) for producing control pulses, the duration
 of which determines the intervals during which said
 motor is energized and said pump is in operation.

It is further disclosed that the output switch of the monitoring means is a voltage sensitive
 switch responsive to the voltage varying with the integrated value and adapted to switch to its
 operated condition when said varying voltage reaches a threshold value (CLAIM 11), in which
 further said particular quantity of electricity is determined by the threshold value of the varying
 voltage (CLAIM 11).

11. A voltage regulator system as defined in claim 1
 in which said monitoring means (4) includes a measur-
 ing resistor (31) in series in said load circuit, in which
 30 further the voltage drop produced by the current
 through said measuring resistor is provided to an inte-
 grator (32), in which further said output switch (33) of
 said monitoring means (4) is a voltage sensitive switch
 responsive to the voltage varying with the integrated
 35 value as formed by said integrator (32) and adapted to
 switch to its operated condition when said varying volt-
 age reaches a threshold value, in which further said
 particular specific quantity of electricity referred to in
 claim 1 is determined by said threshold value of said
 40 varying voltage, and in which a reset means (34) re-
 sponsive to operation of said output switch (33) is pro-
 vided in said monitoring means for resetting said inte-
 grator (32).

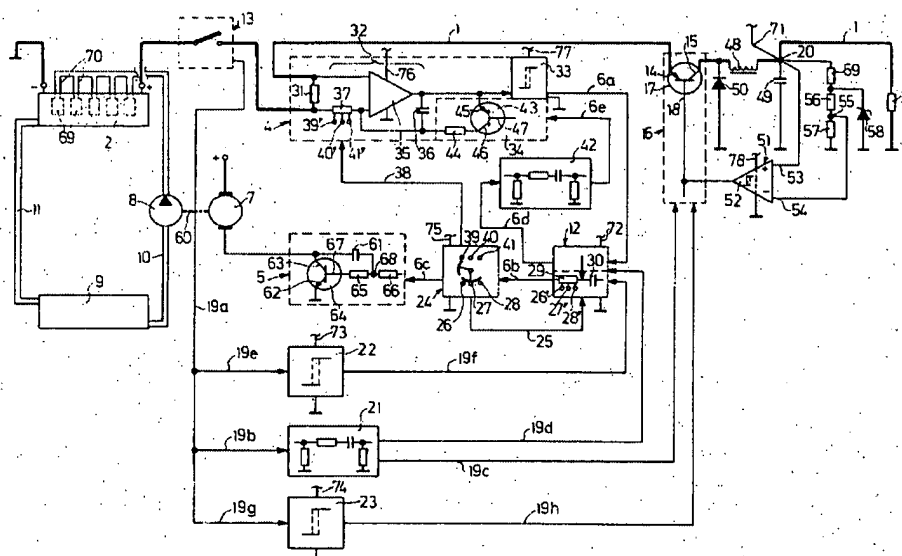
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With respect to claim 2:

Keller et al disclose that the fuel cell battery comprises individual cells, which are connected by individual branches. This is feasible because it provides a fuel cell assembly without the occurrence of disturbing losses from bridging of the individual cell (COL 6, lines 24-35). *Thus, the second set of fuel cell and electrical features are inherently recited.*

On the matter of claims 3-4:

Figure 1 below gives a picture of a schematic diagram of a regulator system according to Keller et al's invention and shows the load is located upstream downstream from the fuel cell in an air flow communication therewith and proximate to the fuel cell.

In reference to claim 5:

Keller et al teach several capacitors (COL 4, lines 1-5/ Col 5, lines 25-28 and lines 37-40/ CLAIMS 12 and 15-16).

As far as claim 6:

Keller et al teach an inductor (Col 5, lines 37-40/ CLAIM 15).

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On the subject of claims 7 and 9:

Keller et al reveals the use of an npn transistor (COL 6, lines 6-10) as well as a pnp transistor (COL 2, line33-35/COL 5, lines 17-18).

Thus the claims are anticipated.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (703) 306-3326. The examiner can normally be reached on Monday-Thursday (8:30 am - 7:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Raymond Alejandro
Examiner
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